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EXAMINER

WALICKA, MALGORZATA A

ART UNIT PAPER NUMBER

1652

DATE MAILED: 04/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/808,717

Applicant(s)

SAN ET AL.

Examiner

Malgorzata A. Walicka

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-26 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claim 1, 2, 4, 5, all in part, drawn to a method of manipulating metabolism of a cell comprising elevated expression of one or more enzymes involved in A-CoA metabolism wherein said enzyme is pyruvate dehydrogenase, classified in class 435, subclass 252.33.
- II. Claim 1, 2, 4, 5, all in part, drawn to a method of manipulating metabolism of a cell comprising elevated expression of one or more enzymes involved in A-CoA metabolism wherein said enzyme is pyruvate oxidoreductase, classified in class 435, subclass 375.
- III. Claim 1, 2, 4, 5, all in part, drawn to a method of manipulating metabolism of a cell comprising elevated expression of one or more enzymes involved in A-CoA metabolism wherein said enzyme is pyruvate formate lyase, classified in class 435, subclass 375
- IV. Claim 1, 2, 4, 5, all in part, drawn to a method of manipulating metabolism of a cell comprising elevated expression of one or more enzymes involved in A-CoA metabolism wherein said enzyme is panthotenate kinase, classified in class 435, subclass 375

- V. Claim 1, 2, 4, 5, all in part, drawn to a method of manipulating metabolism of a cell comprising elevated expression of one or more enzymes involved in A-CoA metabolism wherein said enzyme is phosphopantetheine adenylyltransferase, classified in class 435, subclass 375.
- VI. Claims 1-5, all in part, drawn to a method of manipulating metabolism of a cell comprising elevated expression of a combination of enzymes involved in A-CoA metabolism wherein combination of said enzymes is panthothenate kinase and pyruvate dehydrogenase, classified in class 435, subclass 375.
- VII. Claims 1-5 all in part, drawn to a method of manipulating metabolism of a cell comprising elevated expression of a combination of enzymes involved in A-CoA metabolism wherein combination of said enzymes is panthothenate kinase and alcohol acetyl transferase, and wherein the pank is under control of lac promoter and ATF2 gene is under control of the ptb promoter, classified in class 435, subclass 375.
- VIII. Claims 1-5, all in part, drawn to a method of manipulating metabolism of a cell comprising elevated expression of a combination of enzymes involved in A-CoA metabolism wherein combination of said enzymes is

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panthothenate kinase, alcohol acetyl transferase and pyruvate dehydrogenase, and wherein the panK is under control of lac promoter and ATF2 gene is under control of the ptb promoter, classified in class 435, subclass.

- IX Claims 6-9 all in part, a method of manipulation the metabolism of a cell comprising deletion of one or more A-CoA utilizing pathways, wherein said pathway is acetate formation pathway, classified in class 435, subclass 375.
- X Claims 6-9 all in part, a method of manipulation the metabolism of a cell comprising deletion of one or more A-CoA utilizing pathways, wherein said pathway is citrate synthase formation pathway, classified in class 435, subclass 375.
- XI Claims 6-9 all in part, a method of manipulation the metabolism of a cell comprising deletion of one or more A-CoA utilizing pathways, wherein said pathway is fatty acid biosynthesis pathway, classified in class 435, subclass 375.
- XII Claims 6-9 all in part, a method of manipulation the metabolism of a cell comprising deletion of one or more A-CoA utilizing pathways, wherein said

pathway is malonate formation pathway, classified in class 435, subclass 375.

- XIII Claims 6-9 all in part, a method of manipulation the metabolism of a cell comprising deletion of one or more A-CoA utilizing pathways, wherein said pathway is acetoacetate formation pathway, classified in class 437, subclass 375.
- XIV Claims 10, 11 and 13 all in part, directed to a method for production of one or more target compounds wherein the compound is succinate, and the method involves increasing the intracellular level of A-CoA by elevated expression of enzymes involved in A- CoA metabolism, classified in class 435, subclass 136.
- XV Claims 10, 11 and 13 all in part, and claims 14-16 all in their entirety, directed to a method for production of one or more target compounds wherein the compound is isoamyl alcohol, and the method involves increasing the intracellular level of A-Coal by elevated expression of enzymes involved in A- CoA metabolism, classified in class 435, subclass 155.
- XVI Claims 10, 11 and 13 all in part, directed to a method for production of one or more target compounds wherein the compound is isoamyl acetate, and the method involves increasing the intracellular level of A-CoA by

elevated expression of enzymes involved in A- CoA metabolism, classified in class 435, subclass 135.

XVII Claims 10, 11 and 13 all in part, directed to a method for production of one or more target compounds wherein the compounds are esters, and the method involves increasing the intracellular level of A-CoA by elevated expression of enzymes involved in A- CoA metabolism, classified in class 435, subclass 135.

XVIII Claims 10, 11 and 13 all in part, directed to a method for production of one or more target compounds wherein the compounds are PHBs, and the method involves increasing the intracellular level of A-CoA by elevated expression of enzymes involved in A- CoA metabolism, classified in class 435, subclass 135.

XIX Claims 10, 11 and 13 all in part, directed to a method for production of one or more target compounds wherein the compounds are polyketides, and the method involves increasing the intracellular level of A-CoA by elevated expression of enzymes involved in A- CoA metabolism, classified in class 435, subclass 136.

XX Claims 10, 12, 13 all in part, directed to a method for production of one or more target compounds wherein the compound is succinate and the intracellular level of A-CoA is increased by deletion of one or more A-CoA utilizing pathways, classified in class 435, subclass 136.

- XXI Claims 10, 12, 13 all in part, directed to a method for production of one or more target compounds wherein the compound is isoamyl alcohol, and the intracellular level of A-CoA is increased by deletion of one or more A-CoA utilizing pathways, classified in class 435, subclass 155.
- XXII Claims 10, 12, 13 all in part, directed to a method for production of one or more target compounds wherein the compound is isoamylacetate and the intracellular level of A-CoA is increased by deletion of one or more A-CoA utilizing pathways, classified in class 435, subclass 135.
- XXIII Claims 10, 12, 13 all in part, directed to a method for production of one or more target compounds wherein the compounds are esters and the intracellular level of A-CoA is increased by deletion of one or more A-CoA utilizing pathways, classified in class 435, subclass 135.
- XXIV Claims 10, 12, 13 all in part, directed to a method for production of one or more target compounds wherein the compounds are PHBs and the intracellular level of A-CoA is increased by deletion of one or more A-CoA utilizing pathways, classified in class 435, subclass 135.
- XXV Claims 10, 12, 13 all in part, directed to a method for production of one or more target compounds wherein the compounds are polyketides and the

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intracellular level of A-CoA is increased by deletion of one or more A-CoA utilizing pathways, classified in class 435, subclass 136.

XXVI Claims 17-20 directed to a microorganism which expresses one or more enzymes involved in A-CoA metabolism at elevated levels, classified in class 435, subclass 252.33.

XXVII Claims 21-26, directed to a method of increasing CoA pool, comprising producing increased levels of pantothenate kinase, classified in class 435, subclass 375.

The 27 inventions listed above are distinct for the following reasons.

Inventions I-XXVI and invention XXVII are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions XXVII and I-XXVI are related to methods producing different chemical compounds. Group XXVII is directed to a method of increasing CoA pools, while groups I-XXVI are directed to increased production of A-CoA or compounds such as succinate, isoamyl alcohol, isoamyl acetate, esters, PHBs and polyketides and transformed organisms. Because groups I-XXVI are directed to methods of increasing A-CoA in the cell or production of succinate, isoamyl alcohol, isoamyl acetate, esters, PHBs and polyketides groups I-XXVI are directed to production

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of different chemicals than that of group XVII. The groups I- XXVI are not disclosed as capable of use together with the method of Group XXVII, i.e., the inventions are distinct.

Groups I-VIII are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions I-VIII are eight different methods of manipulating metabolism which have different designs modes of operation and effects.

Groups IX –XIII are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions IX-XIII are five methods of manipulation of metabolism of a cell by deleting five different pathways of utilizing A-CoA. The methods are not capable of use together because they have different designs, modes of operations and effects on metabolism of a cell.

Groups XIV -XIX are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions XIV-XIX are 6 methods of producing 6 different products. Thus, they have different design, modes of operation and effects.

Groups XX- XXV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions XX-XXV are 6 methods of producing 6 different products. Thus, they have different design, modes of operation and effects.

Groups 1-VIII and groups IX-XIII Inventions are unrelated if it can be shown that They are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, although groups I-VIII and IX-XIII are directed to methods of manipulating metabolism of A-CoA in a cells, the methods I-VIII are different than methods of groups IX-XIII, i.e., they have different design and mode of operation, and are not capable of use together.

Groups I-VIII and groups XIV-XIX are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, groups I-VIII are directed to methods of manipulating metabolism of A-CoA in a cells, and groups XIV-XIX are six different methods for producing six different products. The methods of groups I-VIII and groups XIV-XIX have different design and mode of operation and effects, are not capable of use together.

Groups I-VIII and groups XX-XXV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, groups I-VIII are directed to methods of manipulating metabolism of A-CoA in a cell, and groups XX-XXV are six different methods for producing six different products. The methods of groups I-VIII and groups XX-XXV have different design and mode of operation and effects, and are not capable of use together.

Inventions of Groups I-VIII and group XXVI are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process as claimed can be used to make materially different product, i.e., to make a mammalian or plant cell expressing one or more enzymes involved in A-CoA metabolism at elevated levels.

Groups IX-XIII and groups XIV-XIX are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, groups IX-XIII are directed to methods of manipulating metabolism of A-CoA in a cell, and groups XIV-XIX are six different methods for producing six different

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products. The methods of groups XIV-XIX and groups XIV-XIX have different design and mode of operation and effects, are not capable of use together.

Groups IX-XIII and groups XX-XXV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, groups IX-XIII are directed to methods of manipulating metabolism of A-CoA in a cell, and groups XX-XXV are six different methods for producing six different products. The methods of groups IX-XIII and groups XX-XXV have different design and mode of operation and effects, and are not capable of use together.

Inventions of Groups IX-XIII and group XXVI are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, groups IX-XIII are directed to methods of manipulating metabolism of A-CoA in a cells, and group XXVI is directed to transformed microorganisms, whose transformation is not related to methods of groups IX-XIII. The methods of groups IX-XIII and transformants of group XXVI are not disclosed as capable of use together.

Groups XIV-XIX and XX-XXV are unrelated. Inventions are unrelated if it can

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be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, groups XIV-XIX are directed to 6 methods of producing 6 different products, and groups XX-XXV are directed to six other methods of producing the same products. The methods of groups XIV-XIX and groups XX-XXX have different design and mode of operation and effects, are not capable of use together.

Inventions of Groups XIV-XIX and group XXVI are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In the instant case it can be shown that (1) is proper. The processes for using the product for production of six products can be used with transformed mammalian or plant cells and not with transformed microorganism.

Groups XX-XXV and group XXVI are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, groups XX-XXV are 6 methods of producing 6 different products, that cannot be produced using transformants of group XXVI.

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, different classification and because these inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Malgorzata A. Walicka whose telephone number is (571) 272-0944. The examiner can normally be reached on Monday-Friday from 10:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura Achutamurthy, can be reached on (571) 272-0928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

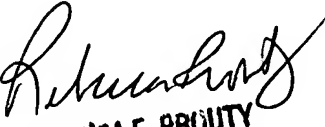
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published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Malgorzata A. Walicka, Ph.D.

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